

Massachusetts Water Resources Commission

Meeting Minutes for January 13, 2000

Commission Members in Attendance:

Peter Webber	Commissioner, Department of Environmental Management
Mark P. Smith	Designee, Secretary of Environmental Affairs
Lee Corte-Real	Designee, Department of Food and Agriculture
Joseph E. Pelczarski	Designee, Massachusetts Coastal Zone Management
Glenn Haas	Designee, Department of Environmental Protection
Richard Thibedeau	Designee, Department of Environmental Management
Karen Pelto	Designee, Department of Fish, Wildlife and Environmental Law Enforcement
Marilyn Contreas	Designee, Department of Housing and Community Development
Robert Zimmerman	Public Member
Jeff Kapell	Public Member

Others in Attendance:

Lealdon Langley	DEP, Office of Watershed Permitting
Mike Gildesgame	DEM, Office of Water Resources
Michele Drury	DEM, Office of Water Resources
John Magenheimer	DEM, Office of Water Resources
Linda Marler	DEM, Office of Water Resources
Vicki Gartland	DEM, Office of Water Resources
Lee Azinheira	Town of Mansfield
Dianne Royle	Town of Mansfield
Louis P. Amoruso	Town of Mansfield
John D'Agostino	Town of Mansfield
Kurt Gaffney	Town of Mansfield
Daniel Garson	Woodard and Curran
Maria Van Dusen	DFWELE, Riverways Coordinator
Gretchen Roorbach	MWRA
LM Downey	MWRA
Bruce Taggart	USGS
Jamie Hellen	EOEA
Nina Danforth	DEM, Office of Water Resources

Agenda Item #1:Executive's Director Report

Mark P. Smith briefed the WRC members on the following items:

- January 19th the Northeast Watershed Roundtable will host a conference on streamflow. The conference will bring together the various states to discuss about their current work in progress to protect and regulate streamflows. Smith stated the conference is over subscribed. Maria Van Dusen of the Massachusetts Riverways Program put the conference together and states the conference's goal was to get a variety of people together, not just state agencies, to

hear various experts speak on current research related to streamflow. She invited the WRC to pass along any follow-up thoughts from the conference to be passed along to Mark. Conference organizers will be doing follow-up after the conference.

- Eastern States Water Federation holding an organizational meeting in February. Secretary Durand has been asked to participate in the Florida conference from David Struhs. The purpose of the conference is to discuss possible ways to secure federal funds to protect water supply and resource development. Smith added that he believes this conference is in response to the Western Water Federation, which has been successful at securing funds for these activities. It will be interesting to see what comes about.
- The Drought Management Task Force will meet on February 23rd at the MEMA Operations Center in Framingham. Smith added that most droughts start with a dry winter as opposed to a dry summer. Smith suggests that we should work with Lealdon Langley of DEP to send a letter of the current water status in time for town meetings. Smith refers to the Drought Management Standard Operating Procedure, which is on the WRC work plan, and will be discussed later.
- Hydrologic Current Conditions Report-Linda Marler handed out the Hydrologic Current Conditions Report. December's precipitation levels were below normal, 58% of normal. January was looking more optimistic. January has already had more precipitation than December. Streamflow was right around historic medians. Groundwater levels were low around the Cape and Islands and spreading farther up into Southeast Massachusetts. The rest of the state was experiencing normal conditions. Surface water levels were normal around the state. Surface water reservoirs: most were good, and a few were still recovering. Beverly, Salem, Lynn, Worcester were a little low, and closely monitoring. Water suppliers would like some help from the state and support from politicians to provide mandatory water bans in these communities. Bruce Taggart from the United States Geologic Survey handed out a report done by USGS on United States Streamflow Possibilities during the event of La Nina. He gave a very brief description of each section.

Agenda Item #2: Minutes for December 9, 1999

Smith added one correction, Rich Thibedeau works for the Department of Environmental Management and **not** the Department of Environmental Protection.

V	Zimmerman moved with a second by Haas that:
O	THE WATER RESOURCES COMMISSION ACCEPTS THE MINUTES FOR
T	DECEMBER 9, 1999 AS AMENDED.
E	The motion passed unanimously.

Agenda Item #3: Vote on the Completeness of the Mansfield Interbasin Transfer Application for Morrison Well #10

Smith asked John D'Agostino to introduce the town selectmen. D'Agostino acknowledged Dianne Royle, Chair of the Board of Selectmen, Louis Amoruso, member of the town board, Lee Azinheira and Kurt Gaffney from the Town of Mansfield, and Dan Garson from Woodard and Curran.

Drury mentioned that agency review on the application was finalized on the morning of January 13, 2000, and it was determined that there was enough information in the application to go forward with the technical and environmental review. Drury reminded the WRC that by accepting the application as complete, it is not making a judgement on the merits of the application, but simply giving the staff the permission to start the review and start the clock for the public hearings that are required under the Interbasin Transfer Act. Drury gave a brief synopsis of the project:

- Mansfield has land area in the Ten Mile and Taunton River Basins.
- The Town of Mansfield will use water.
- The proposed well site will be located in the Ten Mile River basin. Mansfield's sewerage treatment plant is in the town of Norton, in the Taunton River basin. Therefore water will cross both a town line and basin line for wastewater discharge, triggering the Interbasin Transfer Act.
- The application was submitted in October 1999 and has been reviewed for completeness of information by the environmental agencies.
- The proposed withdrawal is 0.99 mgd.
- Foxborough is developing two wells upstream, at Witch Pond in Foxborough. These wells will be subject to the ITA because Foxborough discharges a portion of their wastewater to the Mansfield treatment plant.

Smith added he had two letters related to this issue: one from Senator Joanne Sprague and the other is in response to Dan Garson's letter on behalf of the town of Mansfield, which asks the WRC staff and the DEP to coordinate their review of the Water Management Act and the Interbasin Transfer Act. Smith then extended a thanks to the agencies who worked hard to complete the review on a strict time schedule to have this issue go forward.

Smith stated that a major issue with this proposal would be to determine the impacts to an Atlantic white cedar swamp from the proposed water withdrawal. The proponent has provided information concerning the impacts of withdrawals on the water levels but it is not clear how those impacts will affect the swamp. This will be up to the agencies and the commission to determine and not the Town of Mansfield. The town was not able to identify research discussing impacts to Atlantic White Cedars. Staff will research this issue when they are evaluating the merits of this proposal. The town is aware of the swamp and is aware of the two endangered species in the swamp. Smith thanked the staff one more time in their extra effort in getting this application reviewed so the town can proceed with a purchase and sale agreement.

Drury added she will be sending notices of the public hearings and encourages WRC members to attend. Smith added there will be three hearings, 2 on the merits of the application, and one hearing on the staff recommendation.

V O T E	Haas moved with a second by Corte-Real that:
	THE COMMISSION CONSIDERS THE TOWN OF MANSFIELD'S INTERBASIN TRANSFER APPLICATION FOR MORRISON WELL #10 IS COMPLETE.
	The motion passed unanimously.

Agenda Item #4: Info 2000

This agenda item will be postponed. DEP is updating their data gathering systems.

Agenda Item #5: Interbasin Transfer Conditions Update

Drury distributed the memo from last month, but not the attachments, noting that she sent out the entire packet last month, and it was quite extensive.

Drury started with the Braintree-Weymouth Interbasin Transfer application. They were told they need to adhere to some specific conditions, one of those being they needed to provide the EPA and DEP with their operation and maintenance manual by December 31, 1999, which they have done. Bob Zimmerman asked about what project this would be and Drury responded that this is the sewer extension project.

Drury stated that in the memorandum she lists each approved Interbasin Transfer and the conditions and discusses the current status of compliance with those Interbasin Transfers. Some of the transfers are quite old. When Elizabeth Kline left EOEA and the files were moved, it appears that some of the files were lost. Drury had to reconstruct the files, and that is why some items may have recent dates. Smith gave an example of the Wellesley Extension Sewer, which was approved years ago.

Drury mentioned that many of the recent approvals required the town to present their updated conservation plan, leak detection, or water audit, etc. to the WRC. The WRC then voted on whether those conditions had been met. Drury stated that she attached all minutes relating to each respective project when she sent out her memorandum last month. The only items that haven't come before the Commission are the streamflow and pumping records. She stated that DEM, Office of Water Resources and DFWELE, Marine Fisheries staffs review these for any outstanding violations each year. So far there have not been any.

There was a case with the Natick Elm Bank IBT, when they were operating under a DEP administrative consent order and violated the streamflows. When this issue was going through the IBT approval process, DEP had expressed concerns about public health and safety concerns with regards to the streamflow limits. The consent order superceded the IBT approval. The latest information indicates they have been in compliance with streamflow standards.

Zimmerman asked if they ever got their Evergreen Wells #1 and #2 filtration done. He thought the Elm Bank was temporary and that when they got the Evergreen sites back on track, the Elm Bank was supposed to be shut down. DEM and DEP responded that the Elm Bank wells are permanent, but while the Evergreen wells were being rehabbed, it was the sole source for Natick.

DEM sends reminders each year to Dedham-Westwood and Natick (they will send a letter to Canton when they get the well in) to remind them that the information is due to the WRC. DEM forwards the information to the Division of Marine Fisheries for their review. Smith asked if we have a perfect record, or are there any other specific situations that do not comply? Drury responded that the record is not perfect but practically perfect. Drury then mentioned that Natick is required to keep their residential GPCD at 80 or less. There were some fluctuations in late 1980's but since then they have been well under the GPCD requirements.

Smith mentioned that Duxbury came to the WRC to obtain a water needs forecast for a new well. The town was then ordered to adopt conservation restrictions. The proposed well was near Massachusetts Audubon Society property. WRC expressed an interest in them reporting to the WRC, but because the WRC did not have to give an official approval, Smith believes they never returned.

Gildesgame noted that Duxbury did return on two or three occasions to report to the WRC. They came to report all of the steps the town had taken to prove their conservation and system efficiency measures. Gildesgame then recommended having the town come back again before the WRC and give an update. Smith agreed and added a request to invite Lou Wagner, from Massachusetts Audubon Society, to that specific WRC meeting. Zimmerman asked if they put the well in. Smith added they did build the well, and stated that the town might not have gone through the pain and suffering of building the well had they known what they possibly could have done in regards to water conservation measures. Smith added this was a valuable lesson for the WRC.

Karen Pelto added that it would be a good idea to invite Duxbury and that when we do invite them, include George Zoto, the South Coastal Watershed Team Leader.

Agenda Item #6: Work Plan for Year 2000

Smith handed out a short report on the projects for the WRC in the upcoming year. The report contains each project along with a concise description and the lead person on each project. Smith apologized for the late arrival of the report.

The major projects include:

- **Stressed Basin/Streamflow Protection:** This item will be summarized later in the agenda.
- **Clarification of Legal Standing Under the Interbasin Transfer Regulations:** Smith acknowledged they would like to work with Kerry Mackin on this issue, especially regarding to her concerns within the Ipswich River situation.
- **Impacts of Wastewater:** Haas added that DEP is currently discussing whether they are going to change the way they deal with sewer connections and extensions. Smith agreed that

the WRC should collaborate with DEP on these issues because it is important that someone has jurisdiction on these wastewater impacts.

- **Drought Management:** Joe Pelczarski added to make sure we include, in any drought definition, what constitutes ending a drought. Haas states that the DEP is looking at whether they are going to change their definition of drought because of the issues surrounding perennial vs. intermittent streams. Smith added that the Rivers Protection Act only protects perennial streams and not intermittent, and it is possible to declare a stream intermittent to ignore the Rivers Protection Act or drought conservation measures. Smith added that the intermittent vs. perennial issue will be before the WRC soon.
- **Streamline Water Supply Permitting:** New site exam request package is ready. This package includes a site-screening document, which will help determine earlier on that projects might be located within a sensitive ecosystem or affect endangered species. Duane LeVangie is updating the conservation plan and questionnaire that will be drafted into one document. This document will be of help during requests for water needs forecasts as a starting point for IBT and the Water Management Act. Smith stated that the WRC should consider approving this effort because of the relevance this document would have in relation to some of the WRC processes it deals with. Due to the new MEPA regulations, all significant IBTs are required to have an Environmental Impact Report (EIR). The IBT application will serve as an outline instead for the EIR. There are also efforts to unify the IBT questions with Water Management Act questions to get rid of repetitive questions. The WRC will have to approve. Smith will provide updates on these issues.
- **Biological Conservation and Ecosystem Protection:** A priority of Secretary Durand. There will be a report provided to the WRC on biological conservation and ecosystem protection, and included will be an update on what work is being done. This report will be provided to the WRC before any tasks or projects are assigned to the WRC.
- **Outdoor Water Use Conservation Program:** Recommendations on outdoor water use conservation measures need to be submitted to the WRC. Then after analyzing those recommendations and the respective legal authority (Water Management Act, BMP's, rate structures), the WRC can decide what they want to do. Pelto mentioned that the South Coastal team has been creatively talking with landscaping consultants to develop a model program in the watershed. Gildesgame added that landscaping consultants all over the state are advising folks on what types of plants to put in their yards and to use less water. Pelczarski recommended that the WRC develop an outdoor water use conservation program before the summer because of the possibility of a drought. He added that there is plenty of material on this issue. Gildesgame agreed and recommended asking the WRC to emphasize "implementation" of water conservation measures as opposed to creating new programs. Commissioner Webber asked if DEM has any ability to find private well trends in regards to the location to where wells are being built. Gildesgame responded that it is possible to see if where and how wells are being used.
- **Updating Water Needs Forecast:** This project is to revisit how the WRC reviews a town's current and future water needs. Currently the WRC looks at population and water supply as its two main factors in determining Water Needs Forecasts. In addition, if WMA permitted communities request new projections, they will have to demonstrate that they are in compliance with existing WMA conservation conditions and that they have low UAW and residential gpcd.
- **Rivers Protection Act:** Review the draft of the draft definition of drought and intermittent streams being developed by DEP.

- **Streamflow:** USGS has been working on the Ipswich River Basin hydrologic model. Commissioner Webber asked if we have a basin by basin net inflow and net outflow? Gildesgame and Drury stated that there is some information on this subject, where basin plans have been done. Haas and Smith added that the MWRA is pulling together data and information on their basins to do a report in net inflow and net outflow. Zimmerman stated the CRWA recently finished the draft report for Holliston. He noted that the study shows that last summer if Holliston had left the wastewater within the basin, then the streams would have been at historic normal flows. But because wastewater was not left in basin and was discharged somewhere else, the streams became intermittent.

Webber stated that Secretary Durand and UMASS President Bill Bulger have signed an extension agreement for the Universities and State Agencies to coordinate more applied research for students.

- **Update “Guide to Interbasin Transfer Act”:** Updating the 1985 document by consolidating it with the 1987 wastewater guidance and the 1999 performance standards.
- **Presentation and review of the hydrologic model developed for the Ipswich River.**
- **WRC Website:** A WRC web page will be developed as part of the EOEA/DEM website.
- **Streamflow Website:** This project will be a presentation and review of the USGS website that includes real-time and other streamflow statistics for gages in Massachusetts. Vicki Gartland noted that the site and presentation will be in the next month or so.
- **Probable Interbasin Transfer Decisions:** Mansfield-Morrison Well, Foxborough-Witch Pond Wells, MWRA-Cummingsville Sewer, MWRA-Upper Neponset Sewer, Ashland-How Street Treatment Plant, New England Patriots-Foxborough Stadium, Chelmsford Water District-Barnes Terrace Well.

Zimmerman made two additional points: (1) Paul Kirshsen, from Tufts University, would like to make a presentation to the WRC on impacts of global warming on infrastructure and streamflow, and (2) asked that the WRC take a look at the issue of returning wastewater to groundwater versus stormwater to groundwater. Zimmerman said you will get better water quantity with returning stormwater to groundwater vs. wastewater to groundwater. Municipally owned wastewater package plants that are held to very high standards, is used as a source of high quality recharge in 36 states in the country. Stormwater is much more difficult to control in the same way. Municipalities are also much more resilient to take on stormwater to groundwater programs.

Pelczarski referred to the new EPA stormwater management standards. Zimmerman responded that the new EPA standards do not adopt all aspects of stormwater yet, and the focus of the program is not complete. He is more concerned about impervious surface from large private developments and the effects of oil, glycol, ethylene, grease, and other chemicals will have on water resources. Then these projects that are approved fail years down the road when the interest is lost from the developer to maintain the high stormwater standards. Smith added that he agrees and that he would like to include the water quantity issues, but he is skeptical about where the resources would come from for projects of this sort. Haas recognized that the DEP’s major concern is that wastewater is better regulated than stormwater. There is no capacity to regulate stormwater, despite having some authority. He also added that it is not widely accepted yet to put the wastewater into a wellfield recharge area.

Haas recommended the WRC list priorities on the work plan.

Agenda Item #7: Stressed Basin Update

Gartland distributed a stressed basin update to the WRC. Gartland stated that, at the WRC direction, she put together a group to discuss stressed basins. The initial intent was to come up with a definition that could be used across the state and then use a colored flag system that could be used to show the status of each river or basin. Methods assess stress already used by state agencies include 303D water quality list, DEP sewer impact analysis, and site screening for water supply projects, as well as other methods. The group has made a few general conclusions:

- Stressed basin classification should be done on a subbasin scale.
- There should be several elements in the definition, including water quantity and quality and habitat.
- There is a need to develop a combination of methods and to do plans on a small scale. It has been very difficult for the team to come up with a simple definition that can be applied everywhere.

USGS is determining a method to assess aquatic habitat, and the DEM inflow/outflow method is used to determine impacts to water quantity. Gartland stated that USGS has looked at streamflow/habitat relations before but on a case by case basis, but they are trying to determine a simple method that can apply on a large-scale basis.

Gartland referred to the handout and how it explains their process of reaching their conclusions. She then referred to the impervious surface issue that Bob Zimmerman brought up and how she has found no method or data to easily quantify impervious surface. Zimmerman then commented that Brian Brodeur looked at old mill towns (more impervious surface in downtown area as opposed to outside the town) and Mindy Roberts looked at more modern towns (more impervious surface outside of towns). Zimmerman recommended looking at the Rapid Watershed Assessment by the Center for Watershed Protection for assessing aquatic habitat.

Gartland pointed out that water use data in Massachusetts is such a huge factor in flow quantity and getting that kind of data in a useful format is very difficult. DEP's statistical sheets (which are the monthly pumpage by source) are mainly in hard copy form and generally in the regional offices. USGS has put together a proposal to computerize all of the DEP water data. This data is such an incredible resource, but not in a manageable form.

Haas mentioned that DEP would be interested in getting predictions from what baseflow would be at the headwaters in natural conditions and what the flow would be if the area were stressed. Gildesgame pointed out that data might not tell you if a basin is stressed. Zimmerman and Haas share the same point of view by saying it will at least tell a community that they need to look at the impacts. Haas recommended that we analyze which rivers have the higher highs are and the lower flows. Smith and Gartland stated that this is part of this years work plan.

Pelczarski recommended that if you have a definition that defines a situation that is stressed, then a definition that defines a situation that is unstressed should be done. He mentioned that it might take a year to become unstressed but a month to become stressed. Pelto acknowledged that we also need to consider chronic stresses vs. seasonal stresses.

Gretchen Roorbach, from the MWRA, asked if we have access to the MWRA data. She acknowledged one could click on their data in real-time any time of the day. You will be able to get exactly how much water is being pumped right then and how much is being brought back. She feels that DEM should have access to this data. Gildesgame asked about cumulative data, and Roorbach responded that cumulative data is done at the end of the month. She then recommended that there should be a data hook-up with MWRA.

Pelto feels it is important that we talk about “fish passage and movement”. “Passage” implies that fish have passage but that does not imply “movement.”

Agenda Item #8: Cranberry Growers MOA Presentation by Lealdon Langley

Langley handed out a draft of the Memorandum of Agreement (MOA). He explained that it is important to understand how much water cranberry bogs use. The group used a 1986 USDA SCS study, which estimated water use by bog acreage. The group adopted the average acreage (water usage by acre). There are two style bogs: old style and new style. Water Management Act (WMA) threshold volume is based on 4.6 acres of old style bogs and that same threshold is met by 9.3 acres of new style bogs. The difference between the old style and the new style bogs are the Best Management Practices (BMP). Those BMP's include tail water recovery, laser leveling and spray irrigation.

If a person is adding acreage, then they must go to the Natural Resources Conservation Service (NRCS), and get certification when their conservation farm plan is reviewed and when they have designed and implemented the BMP's. They can then add up to 9.3 acres before they can exceed the WMA threshold.

The DEP was approached by the Growers Association on how they could encourage the implementation on BMP's on existing acreage and how that could increase agricultural production and that would also mitigate some of the tedious administrative regulatory burden on growers. A proposal was made to the DEP to allow an additional 0.4 acres to be constructed for each existing acre that has constructed tail water recovery, as well as, allowing an additional 0.4 acres for each existing acre that has implemented spray irrigation and laser leveling. The proposal was constructed to include the remaining 0.2-acre feet of water to return to the basin. There would be net savings on water on an average annual basis. Those savings of water because of BMP's would allow for additional acreage to be constructed, hence additional production. Because the annual average annual water usage would not increase, additional acreage could be served, and the stay within the same registered water withdrawal.

The discussions have been completed with a decision to do some testing of the hypotheses of studies the DEP have adopted. The studies include the 1986 USDA SCS study and another study that estimated how much water the three BMP's save. They have also talked to USGS to discuss water budget issues. They would like to put notice out about this plan and see if there are any takers to implement this program and then analyze the results. Langley noted that Jeff Kapell was a major part of the discussions on this issue and deserves a lot of the credit for this program.

Kapell clarified that most of the acres that were registered during the base registration period under the WMA were old style bogs. These bogs were about two feet out of grade because they were made a century ago. These bogs have very old sprinkler systems and do not have tail water

recovery and have not implemented any BMP's. BMP's can provide up to 50% savings of water if implemented correctly. Kapell asked why aren't we providing incentives for growers that have the old style bogs. With this proposal, we will be allowing cranberry growers the option to have the power to use as many BMP's as they wish and get back most of the water they save from however many BMP's they use.

Gildesgame asked how tail water recovery works. Kapell explained that the tail water recovery system is a closed system. The water used for your pumping is then returned back to the source you are pumping from. This system would require all of the cranberry bogs to be laser leveled. Kapell added if a grower is going to renovate a bog to make it level, they must take a bog out of production and that can be quite costly to a grower.

Langley acknowledged that one policy question that came up would be if a grower wanted to implement this program, would they have to incorporate all the BMP's. DEP decided that if a grower wanted to implement this program, they would not have to incorporate all BMP's. The DEP would give the grower back proportionate percentages of the water in relation to how many BMPs were used.

Smith asked if DEP has a sense of the interest in this program. Kapell anticipated that there will be limited interest because of the poor state of the industry. There might be interest from a few growers to make their own operations more efficient to possibly pay mortgages. They aim to handle 20-25 growers if they can get that much approval from the NRCS. Smith seems to agree that this program seems to be "win-win" situation for the growers. The MOA has more in depth information and will be presented to the WRC in the future, but as it currently stands, DEP and the Growers Association are trading drafts of the MOA to finalize it.

Agenda Item #9: Interbasin Transfer Guidance on Rates and Economic Viability

Smith noted that when the WRC approved the performance standards, they asked staff to develop guidance on designing rate structures and presenting costs for viable sources. There were a lot of comments during the public comment process including; how to define a feasible inbasin source, how to define feasible, economically? When are things too expensive?

Smith requested everyone to review the draft guidance and give comments. This project will also be part of the Interbasin Transfer Guidebook Update document Michele Drury is putting together. Smith also mentioned that he hopes to get another group together to discuss this information. Smith mentioned that Nina Danforth helped bring in a national expert on rate structure. Smith acknowledged that the group is still looking for examples and data that have been implemented previously.

Smith then went through the memorandum, which is a general outline on the project and summarizes an American Water Works publication. This document is not prescriptive, but rather guidance on how the WRC should look at each individual community's information and make decisions based on rates and economic viability.

Haas asked if Smith means viable for the proponent or viable for the other basin. Smith stated that the guidance and regulations are different. The regulations refer to costs relative to the Commonwealth. That is what this current group will use. The guidance materials acknowledge

both in basin and out of basin. He thinks that the approach will still be to take on these issues on a case-by-case basis.

Haas pointed out that the question should not be whether the 2% of your income is too much. The question is whether the 2% should be doubled in order to get the water back in basin.

Roorbach commented that seeing definite numbers in writing makes her nervous. She acknowledged that the MWRA will be seriously affected by their lack of definitions in the report that was sent to the WRC in their monthly packets. She is concerned that this process will emphasize giving communities too much power to accept the cheaper option vs. the better option. Smith believed that we aren't going to do that. He wants the towns to bring the appropriate information and how we want the data presented to the WRC and to prove to the WRC that they can handle the cost-effective option.

The meeting was adjourned.

Minutes approved 8/13/00